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of greater or less time. The strange female which I introduced to one of the males had to remain for several weeks in a small cage inside of the larger cage in which the male was confined in order to prevent the sanguinary quarrels in which the birds engaged. At times one would be the victor and again the other; but generally it was the male bird that was triumphant. The victor in every case so bullied and annoyed the vanquished that the life of the conquered birds was, for the time, rendered miserable. However, all this was remedied by time and the birds came ultimately to a satisfactory understanding.

About the middle of May it was evident that they wished to build nests; any straw or stray feather in the bottom of the cage was eagerly taken and attempts were made to place such material in some secure position. I now put branches in both of the cages, with what I considered suitable forks in which the birds might build the characteristic nests of wild grosbeaks. I also placed in the cage rootlets, straw, small sticks and twigs, in short, as nearly as I could, the same material that I found in the nests of wild rose-breasted grosbeaks. These the birds eagerly availed themselves of and for ten days or more engaged themselves most busily in abortive attempts at nest-building. They seemed unable to arrange a suitable foundation of rootlets and twigs in any of the crotches or branches I had given them, and after this thing had gone on for two weeks and no progress had been made, I determined to give them artificial nests. These were the kind of nests supplied to canary birds, being wire baskets of fine mesh into which a felting of cowhair was securely sewed.

In both cases the grosbeaks availed themselves of these nests at once and proceeded to utilize feathers and some extra cowhair that I had given them to complete the lining of the structure. In four days after receiving these nests both females began to lay; but, though each female laid a full complement of eggs, these were generally broken by the birds. The first three or four eggs laid had hard shells and after that each of the females laid several eggs with soft shells. The way that I account

for the eggs being broken is that both birds of each pair, after an egg had been laid in the nest, continued their efforts to build a structure more to their liking, and that it was their claws as they trampled about that perforated the shell of the eggs already laid.

After the first laying which I have described as abortive, an interval of perhaps a week intervened, when laying began again with almost precisely the same results. All this time the males were constantly singing, courting the females, feeding them, caressing them, and the operation of treading was frequently witnessed throughout the day.

While I am not prepared to conclude that the grosbeaks would not have built a nest, if furnished with more commodious quarters and nearer like the condition of affairs that exist out of doors, I conclude that so far as nest-building in cages is concerned they are unable to accomplish anything. So far as the song is concerned I believe that they inherit the call-notes of both pleasure and fear, but that the song of the males was an imitation of the song of a bird that strongly impressed them during the period when they were cultivating this secondary sexual characteristic.

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CURRENT NOTES ON METEOROLOGY.

UTILIZATION OF FOG.

In the *Monthly Weather Review*, XXXII., No. 4, 1904, the suggestion is made by a writer in San Diego, Cal., that an instrument consisting of a wire frame-work be contrived, which shall collect fog particles, conduct the drops into a rain-gauge, and thus make the measurement of fog possible. The object of this measurement would be to show that in such a region as southern California, where the rainfall is small and where there is a good deal of fog, the fog deposit is a considerable one, and is of noteworthy importance to vegetation. In his comments on this suggestion, Professor Abbe rightly points out that it would be difficult, if not impossible, to argue from the catch of a fog screen to the catch of an orchard of trees; that the 'fog depositor'

would give no positive information as to how much the leaves and stems of plants collect, or how much of the water falls to the ground in such a way that the roots of the plants may utilize it, and that the chief benefit which delicate plants on the California coast obtain from the fogs is probably in the protection which the fogs afford against the heat of the sun.

CLIMATE OF SOUTH AFRICA.

J. R. SUTTON, meteorologist of the DeBeers Consolidated Mines at Kimberley, South Africa, has published a paper on 'The Determination of Mean Results from Observations made at Second-Order Stations on the Tableland of South Africa' (*Rept. So. Afr. Assoc. Adv. Sci.*, Vol. I., April, 1903). The observations in Cape Colony are usually made at 8 A.M., Colony mean time, but other hours are used at other stations. It was in order that all these observations may be compared with one another that the present paper was prepared. The author has taken the observations at Kimberley, which are very complete, and has calculated from them the corrections which are needed in order to reduce the hourly means of all elements to the true means for each month and for the year.

CLIMATE OF SIERRA LEONE.

THAT Sierra Leone has some right to the unenviable title of 'the white man's grave' is evidenced by the fact that in the nineteenth century no less than eighteen governors or acting governors of the colony died at their posts or on their way home. This fact is brought out in a recent book on Sierra Leone by Major J. J. Crooks, who was governor at three different times ('A History of the Colony of Sierra Leone, Western Africa,' 1903). Major Crooks admits that 'in spite of sanitary arrangements now in force' the climate 'can not be said to improve greatly.'

THUNDER-STORMS AND PRESSURE.

A. J. MONNÉ, the editor of the new Dutch meteorological journal, *Hemel en Dampkring*, has recently discussed the question of the frequency of thunder-storms under different conditions of pressure, and finds that (in Hol-

land) thunder-storms occur most frequently when the pressure is slightly below the normal. Similar conclusions have also been reached by Prestel and Prohaska. It should, however, be noted that mountain thunder-storms often occur locally during hot, clear, anticyclonic days, when the pressure is high.

SIROCCO IN TUNIS.

HANN calls attention (*Met. Zeitschr.*, 1904, 44-45) to a temperature of 104.9° Fahr. registered at 9 P.M., August 27, 1902, at the meteorological station in Tunis. This remarkably high reading was made during a sirocco. The relative humidity at the same time was five per cent. The sirocco was accompanied by a fall of fine red dust and a few drops of warm rain.

BIRD MIGRATION IN ENGLAND.

STUDIES of the migration of birds made at the Kentish Lightship, in the English Channel, in the autumn of 1903, by Mr. Eagle Clarke, show that the immediate cause of the great migratory movements was a fall of temperature in the area of origin. When this fall occurs, the instinct to migrate appears to be suddenly aroused, and the movement takes place even under the most unfavorable meteorological conditions. The direction of the wind appears to have no influence.

THE WIND.

'Le Vent dans l'Antiquité' is the title of a paper by F. Hooreman, in *Ciel et Terre* for July 1, which may be of interest to many readers who are not especially concerned with meteorology. The subdivisions of this discussion are: Ancient theories regarding the origin and nature of wind; names of the winds; climatic characteristics of winds; the tower of the winds at Athens.

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A STATION FOR THE STUDY OF BIRD LIFE.

ARTICLES of incorporation have just been drawn looking to the establishment on a permanent foundation of the 'Worthington Society for the Investigation of Bird Life.' The